Scientific Areas of Integrated Review Groups (IRGs)

For a listing of the Scientific Review Officer and membership roster for each study section, click on the study section roster under the study section name within an IRG listed below or go to the study section index (study sections listed alphabetically) and click on the specified roster next to the name of the study section.

Surgical Sciences, Biomedical Imaging, and Bioengineering IRG [SBIB]

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- Biomedical Imaging Technology Study Section [BMIT]
- Bioengineering, Technology, and Surgical Sciences [BTSS]
- Clinical Molecular Imaging and Probe Development Study Section [CMIP]
- Medical Imaging Study Section [MEDI]
- Surgery, Anesthesiology, and Trauma Study Section [SAT]
- Small Business Biomedical Imaging [SBMI] (SBIR/STTR)
- Small Business Bioengineering, Surgical Sciences, and Technology [SBTS] (SBIR/STTR)*
- Electromagnetic Devices Special Emphasis Panel [SBIB 92]
- Small Business Biomedical Sensing, Measurement and Instrumentation [SSMI] (SBIR/STTR)*
- Small Business Novel Technologies for In Vivo Imaging and Image-guided Cancer Interventions [SBIB (13)]
- Bioengineering and Imaging Fellowship Study Section [F15]
- Computational modeling and sciences for biomedical and clinical applications [ZRG1 SBIB Q (90)S]

Biomedical Imaging Technology Study Section [BMIT]

[BMIT Membership Roster] [BMIT Meeting Rosters]

The Biomedical Imaging Technology [BMIT] Scientific Review Group reviews grant applications involving basic, applied, and pre-clinical aspects of the design and development of medical imaging system technologies, their components, software, and mathematical methods for studies at the cellular, organ, small or large animal, and human scale. Emphasis is on the technology development but extends to the science of image formation, analysis, evaluation and validation, including image perception, and integration of imaging technologies. Specific areas covered by BMIT:

- Component technologies used in the design, development, implementation, testing and application of imaging systems, such as: image detectors and related energy conversion devices, ionizing and non-ionizing radiation detectors, magnets and coils, and other technologies used in devices to acquire medical image data from various modalities.
- Physics and mathematics of medical imaging devices and systems for hardware and software development: application of methods of applied mathematics for solving inverse problems using iterative, non-iterative, deterministic and probabilistic approaches; and analysis of complex dynamical systems.
- Methods of processing and presenting medical images: display, computational resources for reconstruction, registration, segmentation, visualization, and analysis of 2-, 3-, and 4- (or higher) dimensional data sets from various modalities.
- Development of image-based methods and strategies to characterize tissue or for the support of image-guided surgical or physical interventions that require high performance computing and display of images for interactive man-machine environments that simultaneously, or sequentially, diagnose, plan, treat, update, and follow-up.
- Methodology for validating medical imaging systems including medical-image-observer performance: vision modeling, metrics, calibration, standards, statistical methods, and simulation of an ideal observer using principles of psychophysical experimentation.

Study sections with most closely related areas of similar science listed in rank order are:

Medical Imaging [MI]
Clinical Molecular Imaging and Probes [CMIP]
Clinical Neuroscience and Neurodegeneration [CNN]
Radiation Therapeutics and Biology [RTB]
Clinical and Integrative Cardiovascular Sciences [CICS]

TOP

Bioengineering, Technology, and Surgical Sciences [BTSS]

[BTSS Membership Roster] [BTSS Meeting Rosters]

The Bioengineering, Technology, and Surgical Sciences (BTSS) Study Section reviews grant applications in the interdisciplinary fields of surgery and bioengineering to develop innovative medical instruments, materials, processes, implants, and devices to diagnosis and treat disease and injury. Within BTSS there is a balance between basic, translational, and clinical research and application and development of emerging cross-cutting technologies relevant to the cardiac system. Specific areas covered by BTSS:

- Development of advanced tools and techniques, including the design, construction, and function of cellular and tissue-engineered constructs, vascular and vein grafts.
- Design, development and evaluation of medical devices using animal models and pre-clinical human studies, including endo-surgical procedures, catheter-based surgery, minimally invasive surgery, microsurgical procedures, and robotics.
- Development of therapeutic implantable devices, including delivery systems for drug delivery as well as the delivery of nano-molecules and bio-molecules..
- Fluid mechanics studies of circulation, microcirculation, and transport systems. Biomechanics, computational fluid dynamics, hemodynamics, mathematical modeling, simulation, ventricular remodeling, tissue and organ mechanics and the mechanics of injury.
- Sensors, biosensors, sensing, laser, acoustics, mems, microarrays, imaging, and nanotechnology.

Study sections with most closely related areas of similar science listed in rank order are:

Surgery, Anesthesiology, and Trauma [SAT]
Clinical and Integrative Cardiovascular Sciences [CICS]
Gene and Drug Delivery Systems [GDD]
Electrical Signaling, Ion Transport, and Arrhythmias [ESTA]

Skeletal Biology Structure and Regeneration [SBSR]

TOP

Clinical Molecular Imaging and Probe Development Study Section [CMIP]

[CMIP Membership Roster] [CMIP Meeting Rosters]

The CMIP Study Section reviews the development, synthesis, selection, optimization, and validation of novel diagnostic, therapeutic pharmaceuticals or molecular signatures intended for use in translational and clinical imaging studies. The emphasis is on targeting, metabolism, effectiveness, toxicology, biodistribution, breakdown products and pathological findings for imaging cells, tissues, organs, or whole body in animals and humans. These studies often involve radiochemistry, pharmacokinetics, and pharmacodynamics. Specific areas covered by CMIP:

- The development of targeted MRI probes, using paramagnetic, nanoparticle, hyperpolarized or other contrast mechanisms, and the development of instrumentation that is uniquely required for probe-based imaging.
- The development of targeted molecular imaging agents detectable with X-ray based modalities.
- Development of targeted optical imaging agents, including fluorescence, bioluminescence, photosensitizer, and agents for photoacoustic imaging.
- Development of diagnostic and therapeutic agents and carriers including radiopharmaceutical agents.
- Novel reporter gene strategies for imaging of gene expression and inter-molecular interactions in vivo.
- Live cell imaging including cell trafficking, improved labeling methods, mechanistic studies, physiologic processes, and distribution.
- Translational and clinical toxicity, as well as biodistribution of agents and their breakdown products, which may involve radiochemistry, pharmacokinetic and pharmacodynamic studies of imaging agents.

Study sections with most closely related areas of similar science listed in rank order are:

Medical Imaging [MEDI]
Biomedical Imaging Technology [BMIT]
Microscopic Imaging [MI]
Radiation Therapy and Radiopharmaceuticals [RTB]
Synthetic and Biological Chemistry A [SBCA]
Synthetic and Biological Chemistry B [SBCB]

TOP

Medical Imaging Study Section [MEDI]

[MEDI Membership Roster] [MEDI Meeting Rosters]

The Medical Imaging [MEDI] Scientific Review Group reviews proposals involving the application and validation of in vivo imaging of humans and animals, including early phase clinical studies of medical imaging systems, molecular probes and contrast agents, software, molecular imaging techniques, and related technologies. The underlying technologies may be refined and optimized during testing in response to research questions or clinical needs. Specific areas covered by MEDI:

- Evaluation of improvements in technologies underlying medical imaging systems, as well as studies of available medical imaging systems to evaluate novel medical applications.
- Pre-clinical, Phase-I, and -II clinical trials of medical imaging systems and accessories, including MRI,MRS, optical, PET, PET/CT, fMRI, photoacoustic, DTI, nuclear medicine, ultrasound, multimodality, etc. and their associated contrast agents.
- Prediction, selection, and monitoring of therapeutic response based on imaging studies, with or without exogenous agents, using one or more modalities, especially for multi-temporal investigations to measure changes relative to a pretreatment baseline.
- Applications of imaging systems and modification of diagnostic methods for use in: screening; characterizing physiological effects,, and assessing risk.
- Image-guided interventions in integrated diagnostic and therapeutic systems.
- In vivo strategies and methods for characterizing tissue, and distinguishing between normal and pathologic states, based on estimates of biophysical, biomechanical, bioelectrical, biochemical, metabolic, perfusion/diffusion, or other properties.
- Development of surrogate endpoints based on quantitative imaging for use in clinical trials of medical devices, pharmaceuticals, biologics and other

therapeutic interventions.

- Prediction, selection and monitoring therapeutic response by administering agents and imaging, to detect the location, amount, and fate of the agent in normal and diseased tissues.
- Diagnosis of functional disorders and classification of tissue as normal or pathologic based on exogenous agents that may be tailored to specific cellular processes or genetic expressions.

Study sections with most closely related areas of similar science listed in rank order are:

Clinical Molecular Imaging and Probe Development [CMIP]
Biomedical Imaging Technology [BMIT]
Clinical Oncology [CONC]
Radiation Therapeutics and Biology [RTB]
Clinical Neuroscience and Neurdegeneration [CNN]

TOP

Surgery, Anesthesiology, and Trauma Study Section [SAT]

[SAT Membership Roster] [SAT Meeting Rosters]

The Surgery, Anesthesiology, and Trauma (SAT) Study Section reviews applications in the disciplines of surgery, anesthesiology, and critical care. Sepsis and injury studies reviewed by SAT often address the host response to these complex insults such as trauma, disseminated infection, or surgical stress, with a general focus on systemic metabolic, hormonal, or immune responses to infection and multi-organ damage. Specific areas covered by SAT:

- Tissue, organ and systemic injury responses to surgery, trauma, burn, sepsis, hemorrhage, ischemia-reperfusion, or resuscitation, including integrating pathways and signals.
- Genetic and epigenetic determinants of response to injury or sepsis; and genetic, epigenetic, or pharmacologic approaches for treatment.
- Pathogenesis and therapeutic interventions for shock and multiple organ failure, and for hypoxic or oxidative cell/tissue injury and stress-induced cellular turnover and repair.
- Multi-modal treatment of critical injury including metabolic, hormonal, or nutritional interventions, and infection prophylaxis or therapies.
- Modeling of shock, critical illness, and injury with multi-modal diagnostic and/or therapeutic approaches.
- Skin and integument wound healing, including tissue/organ regeneration, remodeling of damaged tissues, stem cells/progenitors, and novel therapeutic interventions.
- Pharmacology of general and local anesthetics, including mechanisms and side effects.
- Mechanisms and management of pain in the context of surgery, injury, and anesthesiology.
- Approaches to utilize adult stem cells for maintenance or restoration of tissue function.
- Mechanisms of the host response to the tissue damage associated with organ, tissue, or cellular transplantation.
- Surgical approaches to organ/tissue-specific disease, injury, or repair including minimally invasive and transluminal surgical approaches.

Study sections with most closely related areas of similar science listed in rank order are:

Myocardial Ischemia and Metabolism [MIM]
Transplantation, Tolerance, and Tumor Immunology [TTT]
Host Interactions with Bacterial Pathogens [HIBP]
Arthritis, Connective Tissue and Skin [ACTS]
Lung Injury, Repair, and Remodeling [LIRR]

TOP

Small Business Biomedical Imaging [SBMI] (SBIR/STTR)

[SBIR/STTR Rosters]

The Small Business Biomedical Imaging [SBMI] Scientific Review Group reviews SBIR and STTR grant applications involving basic, applied and pre-clinical aspects of the design and development of medical imaging systems, their components, software and mathematical methods, and related technologies. Also reviewed are proposals involving the application and validation of *in vivo* human and animal imaging, including early phase clinical

aspects of medical imaging systems, agents, software and mathematical methods, or related technologies. During testing, the underlying technologies may be refined or optimized in response to research questions and clinical needs.

Specific areas covered by SBMI:

- Prediction, selection, and monitoring of therapeutic response by administration of agents accompanied by imaging to detect the location, amount, and fate of normal and pathologic structures. This implies multi-temporal image-based evaluation of tracers and metabolites in a detailed anatomic framework that could require multiple modalities and post-processing of data sets.

- Diagnosis of functional disorders and classification of tissue as normal or pathologic based on exogenous agents that may be tailored to specific cellular processes or genetic expressions.

- Studies of component technologies used in the design, development, implementation, testing, and application of imaging systems (such as: image detectors and related energy conversion devices, ionizing and non-ionizing detectors, magnets and coils).

- Physical and mathematical approaches to the development of medical imaging devices and systems (hardware and software): for example, the analysis of complex dynamical systems and the application of methods of applied mathematics to solving inverse problems using iterative, non-iterative, deterministic, and probabilistic approaches.

- Medical image processing methods: display, and computational resources for reconstruction, registration, segmentation, visualization, and analysis of 2-, 3- and 4- or higher dimensional data sets.

- Analysis of medical images in conjunction with other sources of non-image data including: multi-media data, data transmitted and archived in databases for data mining, artificial intelligence, computer vision, and computer-aided diagnosis.

- Presentation for human observers, images derived from voluminous multi-dimensional data sets by visualization, including: man-machine interfaces; real-time interactive systems; multi-modality fusion; multi-temporal data sets; and workstation software and hardware design, implementation, and psychophysical testing.

- Development of image-based methods for characterizing tissues using estimates of their local and global biophysical, biomechanical, bioelectrical, biochemical, metabolic, and biological properties.

- Correlative and comparative studies of normal and pathologic states using multi-modal, multi-temporal, and multi-dimensional imaging systems and techniques.

- Image-guided interventions in integrated diagnostic and therapeutic systems. These often require high performance computing and display for interactive man-machine environments.

- Integration of unique imaging systems to accomplish specific tasks.

- Evaluation of prototype and widely available medical imaging systems and accessories, when there are improvements in underlying technologies.

- Methodology for validating medical imaging systems, including: reference objects, databases, quality control criteria, software metrics, and related components.
- Use of imaging to predict, select, and monitor therapeutic responses.

- Applications of imaging systems and modification of diagnostic methods for use in: screening, characterizing physiological effects (such as normal tissue tolerance or low-level radiation effects), and assessing risk.

- Use of principles of psychophysical experimentation and modeling to develop medical-image-observer performance metrics, calibration standards, and simulations of an ideal observer.

- Development of surrogate endpoints based on quantitative imaging for use in clinical trials of medical devices, pharmaceuticals, and other therapeutic interventions.

- Development and application of standards for control of image quality and imaging software using reusable, portable, and extensible open source approaches.

- Synthesis of new diagnostic agents or therapeutic pharmaceuticals used in medical imaging studies.

SBMI has the following shared interest within the SBIB IRG:

- **With Biomedical Computing and Health Informatics [BCHI]:** In general, grant applications that develop or use informatics in the context of

developing medical imaging devices and instrumentation would be referred to SBMI; those that focus on informatics would be referred to BCHI.

SBMI has the following shared interests outside the SBIB IRG:

- **With the Bioengineering Sciences and Technologies [BST] IRG:** The development of instrumentation, techniques, or procedures for imaging molecules or organelles is an area of shared interest. If the purpose of imaging is to address questions of pathology, diagnosis, or treatment assignment would be to SBMI. If the objective of the imaging is to investigate mechanisms or fundamental biological questions, assignment would be to BST.

- **With organ-system and disease IRGs:** In general, applications for which the emphasis is on the design or development of medical imaging systems, their components, or software would be referred to SBMI; where the emphasis is on obtaining structural, functional, or behavioral information, the application would be referred to an organ-system or disease IRG.

TOP

Small Business Bioengineering, Surgical Sciences, and Technology [SBTS] (SBIR/STTR)*

[SBIR/STTR Rosters]

The Small Business Bioengineering, Surgical Sciences, and Technology Scientific Review Group reviews grant applications for the small businesses initiative programs (SBIR and STTR) involved in innovative research and technology development of biomedical devices and systems for treating human diseases. They involve integration of biomedical devices into living systems; or propose systematic, quantitative, and integrative approaches to thinking about and addressing problems important to physiology or clinical medicine.

These bioengineering and surgical science projects integrate physical, chemical, or mathematical sciences and engineering principles into the study of biology, medicine, behavior, and health. They develop innovative biologics, materials, processes, implants, and devices, for the prevention, diagnosis, or treatment of disease. Surgical sciences integrate the device and instrumentation applications into living systems. Studies involving minimally invasive surgery, microsurgery, computer-assisted surgery, and robotics are reviewed in this scientific review group. Pre-clinical studies and studies focused on applications of device/instrumentation are included.

Specific areas covered by SBTS:

- Therapeutic devices and systems: including artificial organs, implantable medical devices, bio-molecule delivery/immobilization devices, and prosthetic devices.

- Advanced techniques and devices that permit tissue engineering, endosurgical approaches, catheter-based surgery, minimally invasive surgery, microsurgical procedures, robotics, and image-guided intervention.

- Development of cellular and tissue-engineered constructs, including: design, construction, and pre-clinical and clinical evaluation of function.

- Development of vertically integrated medical devices, including: pre-clinical human studies, translational medical device development and clinical device validation.

- Optimization of design, development of standards, and monitoring and evaluating medical devices.

SBTS has the following shared interest within the SBIB IRG:

- **With Small Business Biomedical Imaging [SBMI]:** Grant applications proposing the design or development of medical imaging systems, their components, software, or methods of image analysis would be referred to SBMI. Applications proposing the design or development of diagnostic or therapeutic devices or their components would be referred to SBTS.

SBTS has the following shared interests outside the SBIB IRG:

- **With the Bioengineering Sciences and Technologies [BST] IRG:** In general, bioengineering projects would be referred to BST if the focus of the study is technology development or if the results of the developmental effort could apply to multiple devices; if specific medical or medical research device(s) are being developed, the project would be referred to SBTS, or to an organ-system IRG.

- **With the organ-system IRGs:** Applications having a bioengineering or device development focus could be referred to SBTS or to the organ-system IRG depending on the focus of the application. In general, if the device relates to multiple organs, the application would be referred to SBTS.

TOP

Electromagnetic Devices Special Emphasis Panel [SBIB 92]

[SBIR/STTR Rosters]

The Electromagnetic Devices Special Emphasis Panel reviews applications on the development of algorithms, methods and instrumentation that use electromagnetic technology for imaging and therapeutic uses.

Scientific review groups of the SBIB IRG, particularly those reviewing applications in surgery and biomedical imaging have shared interests with all the clinical IRGs in CSR. The scientific review groups of the SBIB IRG that review bioengineering have shared interests with both the clinical and basic science IRGs.

TOP

Small Business Biomedical Sensing, Measurement and Instrumentation [SSMI] (SBIR/STTR)*

[SBIR/STTR Rosters]

The Small Business Biomedical Sensing, Measurement and Instrumentation Scientific Review Group reviews grant applications for the small businesses initiative programs (SBIR and STTR) involving biomedical sensing, measurement, and the development of diagnostic and therapeutic instrumentation. Research that focuses on the development of innovative sensors may range from fundamental physical, mechanical or chemical transduction through basic measurement principles to the design of novel instruments for clinical use.

Specific areas covered by SSMI:

- Sensor technology: use of sensor technology (including micro- and nanotechnology and micro-electromechanical systems) in the development of medical and medical research instrumentation.
- Measurement devices and systems: Instruments for the physiological monitoring of patients or experimental animals.
- Instruments for the diagnosis or treatment of disease.
- Techniques and technology for processing and controlling physiological signals.
- Techniques and technology for remote medical diagnosis and computer-assisted diagnosis and therapy.

SSMI has the following shared interests within the SBIB IRG:

- **With Small Business Biomedical Sensing, Measurement and Instrumentation [SBMI]:** Grant applications proposing the design or development of medical imaging systems, their components, software, or methods of image analysis would be referred to SBMI. Applications proposing the design or development of instruments for diagnosing disease or physiological monitoring of patients or experimental animals would be referred to SSMI.
- **With Small Business Biomedical Sensing, Surgical Sciences and Technology [SBST]:** Grant applications involving the use of biomedical devices for diagnosing or treating human disease would be referred to SBST; if the focus is on instrument development the application should be referred to SSMI.
- **With Biomedical Computing and Health Informatics [BCHI]:** Grant applications that focus on informatics would be referred to BCHI; those that develop or use informatics in the context of developing medical devices and instrumentation would be referred to SSMI.

SSMI has the following shared interests outside the SBIB IRG:

- **With the Bioengineering Sciences and Technologies [BST] IRG:** In general, applications would be referred to BST if the focus of the proposal is technology development, if the instrument being developed will be used in basic research, or if the purpose of the instrument is not known; if the instrument will have medical or medical research applications the proposal would be referred to SSMI.

- **With the organ-system IRGs:** Applications having a bioengineering or instrument development focus could be referred to SSMI or to the organ-system IRG depending on the focus of the study. In general, studies relating to multiple organs would be referred to SSMI.

* If the total number of SBIR/STTR grant applications assigned to is SSMI and SBST is small the two will meet as a single scientific review group.

TOP

Small Business Novel Technologies for In Vivo Imaging and Image-guided Cancer Interventions [SBIB (13)]

[SBIR/STTR Rosters]

This Special Emphasis Panel reviews applications dealing with the development and delivery of novel in vivo cancer-specific image acquisition or enhancement technologies and methods for biomedical imaging and image-guided interventions and therapy for cancer.

Specific areas covered by SBIB (13):

- Novel single and multi-modality molecular imaging and spectroscopy systems
- Novel single and multimodality anatomical and functional imaging systems, methods, agents, and related software
- Development and optimization of efficient imaging systems for cancer screening
- Imaging for diagnosis, staging, or monitoring the effects of cancer therapy
- Image-guided biopsy (IGB), Image-guided therapy (IGT), and Image-guided interventional (IGI) procedures

SBIB (13) has the following shared interests outside the SBIB IRG:

- **With Radiation Biology and Therapeutics Special Emphasis Panel [ONC (11)]:** In general, development and testing of imaging devices and nuclear medicine technologies for cancer diagnosis should be assigned to SBIB (13). Studies of radiotherapy for the treatment of cancer would be assigned to RBT [ONC (11)].

TOP

Bioengineering and Imaging Fellowship Study Section [F15]

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Bioengineering and Imaging

[Surgical Sciences, Biomedical Imaging, and Bioengineering (SBIB) Integrated Review Group]

[F15 Roster]

The F15 study section reviews fellowship applications in clinically-oriented areas of imaging, surgery, bioengineering and computer/informatics. Basic, applied and pre-clinical aspects of the design and development of medical imaging systems, their components, software, and mathematical models, for studies at the organ, small or large animal, and human scale are included. Proposals involving the application and validation of in vivo animals in animals or humans, including early phase clinical studies of medical imaging systems, molecular probes and contrast agents, software, molecular imaging techniques

and related technologies are also reviewed here. Surgical proposals involving trauma, anesthesiology, wound healing, sepsis and pain management are reviewed in xml:namespace prefix = "st1" ns = "urn:schemas-microsoft-com:office:smarttags" />SBIB, as well as proposals focused on the technology surrounding the surgical sciences. The focus of the computer/informatics area is on methods, techniques and software development primarily related to clinical problems. Examples of specific areas include:

- Development and evaluation of surgical systems, therapeutic devices and systems
- Design, development, implementation and testing of imaging systems, including pre-clinical, Phase I, and Phase II clinical trials
- Development of tissue engineered constructs
- Multi-model treatment of critical injury
- Organ preservation
- Pathogenesis and amelioration of shock
- Application of intelligent systems to clinical problems
- Application of data analysis, management and mining to medical records, picture archiving, teleimaging, etc.
- Development of telemedicine systems
- Processing of medical images
- Characterization of tissues by imaged based methods
- Image guided surgical interventions
- Medical image observer performance
- Prediction, selection and monitoring therapeutic response by administering agents and imaging; synthesis of new diagnostic agents
- In vivo strategies for characterizing tissues
- Development of surrogate endpoints based on quantitative imaging

Shared interests:

With F04A (Chemical and Bioanalytical Sciences): Fellowship applications that address the synthesis, isolation and structural determination of small molecules for drug delivery, structure-function relationships of enzymes and metalloproteins, characterization of biologically relevant macromolecules including biopolymers and biomaterials, or the development of analytical instrumentation or biosensors may be assigned to F04A. Fellowship applications addressing the development of diagnostic agents for imaging may be assigned to F15.

With F14 (Technology Development): Fellowship applications that are concerned primarily with bioengineering, microscopic imaging and technology development in support of the basic and biological sciences may be assigned to F14; fellowship applications that are concerned primarily with bioengineering, bioimaging and technology development in support of the clinical and surgical sciences may be assigned to F15.

With organ system and disease fellowships review groups: Fellowship applications that emphasize design or development of medical imaging systems, software, or validation of an in vivo approach may be assigned to F15. If the emphasis is on the use of imaging as a tool, the application should be referred to the fellowship study sections in IRGs dedicated to specific organ systems or diseases.

TOP

Computational modeling and sciences for biomedical and clinical applications [ZRG1 SBIB Q (90)S]

[ZRG1 SBIB Q (90) S Roster]

The ZRG1 SBIB Q (90) S (SBIB) study section reviews bioinformatics proposals that are aligned with the technical areas that are reviewed in the Surgical Sciences, Biomedical Imaging and Bioengineering (SBIB) integrated review group (IRG). The focus is on the development and application of computational modeling and computational sciences to biomedical and clinical problems. This includes methods and techniques from such disciplines as software and hardware engineering, telemedicine, human-computer interaction, advanced computing architectures, and clinical database development, maintenance, and mining. This scientific review group reviews all grant mechanisms, including SBIR and STTR. Topics reviewed in the ZRG1 SBIB Q (90) S are:

- The surgical modeling, planning, simulation, surgical training, robotic surgery, perioperative and emergency medicines that include pharmaceutics, patient assist, monitoring systems and telemedicine.
- The training and quality control tools for physiological data acquisition, reading, and diagnostic decision making.
- Data analysis, image construction, anatomical modeling and the modeling of therapy of diseases associated with diagnostic medical imaging.
- The advanced computing architectures and clinical databases for imaging and physiological data archive and retrieve, data mining, and record management systems.
- The tissue mechanical property modeling, haptics, computer-aided design of surgical implants and devices.
- The pharmacokinetic modeling and special-temporal modeling that are related to the biomedical imaging, perioperative and emergency medicines, and related organ physiological modeling.

Study sections with most closely related areas of similar science listed in rank order are:

Biomedical Imaging Technology [BMIT]
Bioengineering, Techonology, and Surgical Sciences [BTSS]
Modeling and Analysis of Biological Systems [MABS]
Biomedical Computiong and Health Informatics [BCHI]
Biostatistical Methods and Research Design Study Section [BMRD]

TOP

TOP

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Last updated: November 18, 2008